

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (withdrawn) In a communications network, having at least two devices adapted to communicate an instruction between the devices,
a front interface provided on one computer, and a substantially corresponding back interface provided on the other computer,
the improvement comprising:
selection means for selecting the encoding, for encoding the instruction, from a set of one or more available encodings.
2. (withdrawn) A selection means as claimed in claim 1, wherein a stub is adapted to encode the instruction and a respective skeleton is adapted to decoding the instruction.
3. (withdrawn) A selection means as claimed in claim 1, wherein the set of available encodings includes a stream based communication.
4. (withdrawn) A selection means as claimed in claim 1, wherein the set of available encodings includes a virtual computer based communication.
5. (withdrawn) A selection means as claimed in claim 1, wherein the set of available encodings includes a message based communication.
6. (withdrawn) A selection means as claimed in claim 4, wherein the virtual computer is a computer comprising:
an object stack and/or an object heap, each of the stack and heap being adapted to store at least one object and its corresponding type identifier, and
an instruction set having at least one instruction adapted for execution by the virtual computer.

7. (withdrawn) A communications and/or computer network including the selection means as claimed in claim 1.

8. (withdrawn) A method of communicating an instruction from a first device to a second device, the first device having a first interface and the second device having a second interface, the method comprising the steps of:

selecting a communication protocol from a set of available communication protocols,
encoding the instruction in accordance with the selected protocol, and
transmitting the encoded instruction from the first device to a second device.

9. (withdrawn) A method as claimed in claim 8, further comprising the steps of:
receiving the encoded instruction by the second device,
selecting a corresponding decoding protocol from an available set of communication protocols, and
decoding the instruction in accordance with the selected decoding protocol.

10. (withdrawn) A method as claimed in claim 8, wherein at least one of the set of available protocols includes at least one of a message based protocol, a stream based protocol and/or a virtual computer.

11. (withdrawn) A virtual computer, comprising:
an object stack and/or an object heap, each of the stack and heap being adapted to store at least one object and its corresponding type identifier, and
an instruction set having at least one instruction adapted for execution by the virtual computer.

12. (withdrawn) A virtual computer as claimed in claim 11, further comprising:
a state register being adapted to provide at least one operating register.

13. (withdrawn) A virtual computer as claimed in claim 11, wherein the stack enables a user to specify how each object placed on the stack is to be serialised.

14. (withdrawn) A virtual computer as claimed in claim 11, wherein an external identifier is recorded with an object as the object is placed on the heap.

15. (withdrawn) A method of executing an instruction set using a virtual computer, in a communications network having at least two devices, the method comprising the steps of:

serialising the virtual computer to a data buffer in a first device, and
transmitting the data buffer to from the first device to a second device.

16. (withdrawn) A method as claimed in claim 15, further comprising:

receiving the serialised data buffer,
un-serialising the data buffer, and
executing at least one instruction of the virtual computer.

17. (withdrawn) A method as claimed in claim 15, wherein the method is repeated to transmit the virtual computer to a further device.

18. (withdrawn) A method as claimed in claim 15, wherein the virtual computer is a computer comprising:

an object stack and/or an object heap, each of the stack and heap being adapted to store at least one object and its corresponding type identifier, and

an instruction set having at least one instruction adapted for execution by the virtual computer.

19. (currently amended) A communications format for use in providing communication between at least two devices, the format comprising:

a first portion representing data, the first portion being adapted to be rendered and communicated in an electronically communicable format, such as binary format, and

a second portion representing ~~structured data~~~~metadata~~ for defining a data structure and a data format to be given to the first portion,

a plurality of definitions stored in said at least two devices communicating using said communications format, wherein the plurality of definitions define a data structure and a data format given to said first portion and to said second portion, each of said definitions being defined by use of data structures and data formats selected from the plurality of definitions.

wherein the data structure and the data format given to the second portion is definable, using the plurality of definitions, for each communication between said at least two devices~~the data structure and the data format given to the second portion being definable for each communication between said at least two devices.~~

20. (currently amended) A format ~~as claimed in~~according to claim 19, wherein the second portion is adapted to be rendered and communicated in an electronically communicable format, such as binary format.

Claim 21 (canceled)

22. (currently amended) A format ~~as claimed in~~according to claim 19, wherein the first and second portions are communicated between said at least two devices in separate transmissions.

23. (currently amended) A format ~~as claimed in~~according to ~~claimed in~~ claim 19, wherein the second portion represents a selection of at least one data structure and data format to be given to the first portion.

24. (currently amended) A format ~~as claimed in~~according to claim 23, wherein the data structure and the data format to be given to the first portion is stored in at least one of the two devices.

25. (currently amended) A ~~communications~~ format as ~~claimed in~~according to claim 19, wherein the second portion further provides information on reading the data.

26. (currently amended) A format as ~~claimed in~~according to claim 19, wherein the second portion is a tag(s).

27. (currently amended) A format as ~~claimed in~~according to claim 26, wherein the tag(s) is an element of a map providing correlation to stored information defining the second portion.

28. (currently amended) A format as ~~claimed in~~according to claim 27, wherein the map is adapted to map an external identifier to an internal identifier.

29. (currently amended) A format as ~~claimed in~~according to claim 19, wherein the ~~structured data~~metadata is serializable for communication between the devices.

30. (currently amended) A format as ~~claimed in~~according to claim 19, wherein the ~~structured data~~metadata comprises structured data~~metadata~~.

31. (currently amended) A format as ~~claimed in~~according to claim 19, wherein the format only describes the data.

32. (currently amended) A method of communicating between at least two devices, the method comprising the steps of:

providing a first portion representing data, the first portion being adapted to be rendered and communicated in an electronically communicable format, such as binary format, and

providing a second portion representing ~~metadata~~structured data for defining a data structure and a data format to be given to the first portion,

providing a plurality of definitions stored in said at least two devices communicating using said communications format, wherein the plurality of definitions define a data structure and

a data format given to said first portion and to said second portion, each of said definitions being defined by use of data structures and data formats selected from the plurality of definitions,

wherein the data structure and the data format given to the second portion is definable, using the plurality of definitions, for each communication between said at least two devices~~the data structure and the data format given to the second portion being definable for each communication between said at least two devices.~~

33. (currently amended) A method ~~as claimed in~~according to claim 32, wherein the second portion is adapted to be rendered and communicated in an electronically communicable format, such as binary format.

Claim 34 (canceled)

35. (currently amended) A method ~~as claimed in~~according to claim 32, wherein the first and second portions are communicated between said at least two devices in separate transmissions.

36. (currently amended) A method ~~as claimed in~~according to claim 32, wherein the second portion represents a selection of at least one ~~meaning~~data structure and data format to be given to the first portion.

37. (currently amended) A method ~~as claimed in~~according to claim 36, wherein the data structure and the data format to be given to the first portion is stored in at least one of the two devices.

38. (currently amended) A method ~~as claimed in~~according to claim 32, wherein the second portion further provides information on reading the data.

39. (currently amended) A method ~~as claimed in~~according to claim 32, wherein the second portion is a tag(s).

40. (currently amended) A method ~~as claimed in~~according to claim 39, wherein the tag(s) is a map providing correlation to stored information defining the second portion.

41. (currently amended) A method ~~as claimed in~~according to claim 40, wherein the map is adapted to map an external identifier to an internal identifier.

42. (currently amended) A method ~~as claimed in~~according to claim 32, wherein the ~~structured data~~metadata is serializable for communication between the devices.

43. (currently amended) A method ~~as claimed in~~according to claim 32, wherein the ~~structured data~~metadata comprises metadata.

44. (currently amended) A method ~~as claimed in~~according to claim 32, wherein the format only describes the data.

45. (currently amended) An architecture for a first communication device, the architecture comprising:

a programming layer for communications internal to the first device,

a communications layer for communications external to the first device with at least a second device, wherein

the external communications are in accordance with ~~[[the]]~~a format comprising:

a first portion representing data, the first portion being adapted to be rendered and communicated in an electronically communicable format, such as binary format, and

a second portion representing ~~structured data~~metadata for defining a data structure and a data format to be given to the first portion,

a plurality of definitions stored in said first and second devices communicating using said format, wherein the plurality of definitions define a data structure and a data format given to said first portion and to said second

portion, each of said definitions being defined by use of data structures and data formats selected from the plurality of definitions,

wherein the data structure and the data format given to the second portion is definable, using the plurality of definitions, for each communication between said first and second devices~~the data structure and the data format given to the second portion being definable for each communication between said at least two devices.~~

46. (withdrawn) An architecture for a communication device, the architecture comprising:
a programming layer for communications internal to the device,
a communications layer for communications external to the device, wherein
the external communications are in accordance with selection means for selecting
encoding, for encoding the instruction, from a set of one or more available encodings.
47. (withdrawn) An architecture for a communication device, the architecture comprising:
a programming layer for communications internal to the device,
a communications layer for communications external to the device, wherein
the external communications include a virtual computer comprising:
an object stack and/or an object heap, each of the stack and heap being adapted to
store at least one object and its corresponding type identifier, and
an instruction set having at least one instruction adapted for execution by the
virtual computer.
48. (withdrawn) Apparatus adapted to provide communications from a first device to a
second device, said apparatus including:
processor means adapted to operate in accordance with a predetermined instruction set,
said apparatus, in conjunction with said instruction set, being adapted to perform a
method comprising the steps of:
selecting a communication protocol from a set of available communication protocols,
encoding an instruction in accordance with the selected protocol, and

transmitting the encoded instruction from the first device to a second device.

49. (withdrawn) Apparatus adapted to execute an instruction set using a virtual computer, said apparatus including:

processor means adapted to operate in accordance with a predetermined instruction set, said apparatus, in conjunction with said instruction set, being adapted to perform a method of executing the instruction set comprising the steps of:

serialising the virtual computer to a data buffer in a first device, and transmitting the data buffer to from the first device to a second device.

50. (currently amended) Apparatus adapted to communicate with a device via a format comprising:

a first portion representing data, the first portion being adapted to be rendered and communicated in an electronically communicable format, such as binary format, and

a second portion representing ~~structured data~~metadata for defining a data structure and a data format to be given to the first portion,

a plurality of definitions stored in said apparatus and said device that are communicating using said format, wherein the plurality of definitions define a data structure and a data format given to said first portion and to said second portion, each of said definitions being defined by use of data structures and data formats selected from the plurality of definitions,

wherein the data structure and the data format given to the second portion is definable, using the plurality of definitions, for each communication between said at least two devices~~the data structure and the data format given to the second portion being definable for each communication between said at least two devices,~~ said apparatus including:

processor means adapted to operate in accordance with a predetermined instruction set, said apparatus, in conjunction with said instruction set, being adapted to perform the communication.

51. (withdrawn) A computer program product including:

a computer usable medium having computer readable program code and computer readable system code embodied on said medium for providing communications from a first device to a second device within a computer system, said computer program product including:

computer readable code within said computer usable medium for performing a method comprising the steps of:

selecting a communication protocol from a set of available communication protocols,
encoding an instruction in accordance with the selected protocol, and
transmitting the encoded instruction from the first device to a second device.

52. (withdrawn) A computer program product including:

a computer usable medium having computer readable program code and computer readable system code embodied on said medium for executing an instruction set using a virtual computer within a computer system, said computer program product including:

computer readable code within said computer usable medium for performing a method comprising the steps of:

serialising the virtual computer to a data buffer in a first device, and
transmitting the data buffer to from the first device to a second device.

53. (currently amended) A computer program product including:

a computer usable medium having computer readable program code and computer readable system code embodied on said medium for providing communications within a computer system between at least two devices, said computer program product including:

computer readable code within said computer usable medium being adapted to communicate via a format comprising:

a first portion representing data, the first portion being adapted to be rendered and communicated in an electronically communicable format, such as binary format, and

a second portion representing structured data~~metadata~~ for defining a data structure and a data format to be given to the first portion,

a plurality of definitions stored in said at least two devices communicating using said format, wherein the plurality of definitions define a data structure and a data format given to said first portion and to said second portion, each of said definitions being defined by use of data structures and data formats selected from the plurality of definitions,

wherein the data structure and the data format given to the second portion is definable, using the plurality of definitions, for each communication between said at least two devices~~the data structure and the data format given to the second portion being definable for each communication between said at least two devices.~~

54. (withdrawn) A device, selection means, network substantially as herein disclosed with reference to the accompanying drawings.

55. (withdrawn) A method substantially as herein disclosed with reference to the accompanying drawings.

56. (currently amended) Apparatus adapted to provide communications from a first device to a second device, said apparatus including:

processor means adapted to operate in accordance with a predetermined instruction set, said apparatus, in conjunction with said instruction set, being adapted to perform a method comprising the steps of:

providing a first portion representing data, the first portion being adapted to be rendered and communicated in an electronically communicable format, such as binary format, and

providing a second portion representing structured data~~metadata~~ for defining a data structure and a data format to be given to the first portion,

providing a plurality of definitions stored in said first and second devices, wherein the plurality of definitions define a data structure and a data format given to said first portion and to said second portion, each of said definitions being defined by use of data structures and data formats selected from the plurality of definitions,

wherein the data structure and the data format given to the second portion is definable, using the plurality of definitions, for each communication between said first and second devices~~the data structure and the data format given to the second portion being definable for each communication between said at least two devices.~~

57. (currently amended) A computer program product including:

a computer usable medium having computer readable program code and computer readable system code embodied on said medium for providing communications from a first device to a second device within a computer system, said computer program product including:

computer readable code within said computer usable medium for performing a method comprising the steps of:

providing a first portion representing data, the first portion being adapted to be rendered and communicated in an electronically communicable format, such as binary format, and

providing a second portion representing structured data~~metadata~~ for defining a data structure and a data format to be given to the first portion,

providing a plurality of definitions stored in said first and second devices, wherein the plurality of definitions define a data structure and a data format given to said first portion and to said second portion, each of said definitions being defined by use of data structures and data formats selected from the plurality of definitions,

wherein the data structure and the data format given to the second portion is definable, using the plurality of definitions, for each communication between said first and second devices~~the data structure and the data format given to the second portion being definable for each communication between said at least two devices.~~